

Annual Report from the Geographic Information Coordinating Council

Presented by:

Dr. Lee Mandell, Chair

**North Carolina Geographic Information Coordinating Council
Office of the State Chief Information Officer**



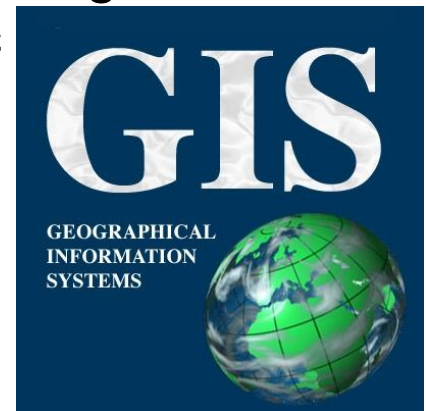
What is GIS?

Geography plays a role in nearly every decision we make.

A Geographic Information System (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

A GIS combines layers of data to give needed information on specific locations to provide extremely powerful and critical decision making tools for State and local agencies.

Geographic information is used by all levels of government to support the delivery of many critical services.



From This:

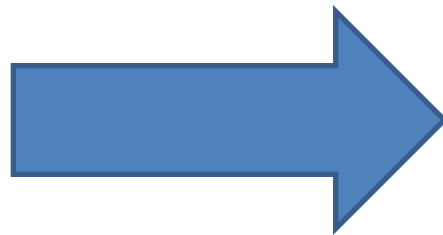


Figure 1. City of San Francisco 311 Service Requests

	A	B	C	D	E
1	req_id	req_type	req_date	req_time	address
2	456901	Request for City Services	6/25/09	7:34	299 WEST PORTAL AVE
3	456903	Street and Sidewalk Cleaning	6/25/09	7:40	SHRADER ST and WALLER ST
4	456912	Street and Sidewalk Cleaning	6/25/09	7:59	POLK ST and REDWOOD ST
5	456913	Graffiti Complaint - Public Prop	6/25/09	8:00	668 NOE ST
6	456917	Street and Sidewalk Cleaning	6/25/09	8:13	JERROLD AVE and MILTON I RO
7	456919	Street and Sidewalk Cleaning	6/25/09	8:19	KIRKWOOD AVE and Rankin
8	456920	Street and Sidewalk Cleaning	6/25/09	8:20	18TH AVE and IRVING ST
9	456921	Tree Maintenance or Damage	6/25/09	8:21	2620 BUCHANAN ST
10	456922	Sewer Issues	6/25/09	8:21	4010 25TH ST
11	456925	Tree Maintenance or Damage	6/25/09	8:24	JACKSON ST and LOCUST ST
12	456929	Request for City Services	6/25/09	8:31	
13	456931	Street and Sidewalk Cleaning	6/25/09	8:31	4833 GEARY BLVD
14	456940	Street and Sidewalk Cleaning	6/25/09	8:50	19TH AVE and LAWTON ST
15	456941	Street and Sidewalk Cleaning	6/25/09	8:50	GARFIELD ST and JUNIPERO S
16	456942	Street and Sidewalk Cleaning	6/25/09	8:51	HARRISON ST and PRECITA AV
17	456945	Street and Sidewalk Cleaning	6/25/09	8:55	972 MISSION ST
18	456947	Street and Sidewalk Cleaning	6/25/09	8:56	MADDOUX AVE and QUINT ST
19	456948	Street and Sidewalk Cleaning	6/25/09	8:56	HURON AVE and WHIPPLE AVE
20	456953	Street and Sidewalk Cleaning	6/25/09	8:59	FRANKLIN ST and GEARY BLVD
21	456954	Graffiti Complaint, Ai Private Pr	6/25/09	9:00	47 DUBOCE AVE
22	456957	Street and Sidewalk Cleaning	6/25/09	9:04	19TH ST and DOLORES ST
23	456958	Street and Sidewalk Cleaning	6/25/09	9:06	503 WALLER ST
24	456959	Street and Sidewalk Cleaning	6/25/09	9:06	JACK KEROUAC ALY and SAROV
25	456962	Graffiti Complaint - Public Prop	6/25/09	9:07	2ND ST and 2
26	456963	Street and Sidewalk Cleaning	6/25/09	9:08	256 EVELYN WAY
27	456964	Street and Sidewalk Cleaning	6/25/09	9:09	GOUGH ST and PAGE ST
28	456965	Street and Sidewalk Cleaning	6/25/09	9:09	493 HILL ST
29	456966	Graffiti Complaint - Public Prop	6/25/09	9:09	2ND ST and market
30	456967	Street and Sidewalk Cleaning	6/25/09	9:10	GOUGH ST and PAGE ST
31	456969	Street and Sidewalk Cleaning	6/25/09	9:13	CERES ST and THORNTON AVE
32	456970	Graffiti Complaint - Public Prop	6/25/09	9:14	BATTERY ST and market
33	456972	Street and Sidewalk Cleaning	6/25/09	9:16	145 CRESTLAKE DR
34	456976	Street and Sidewalk Cleaning	6/25/09	9:22	3RD AVE and BALBOA ST
35	456980	Graffiti Complaint, Ai Private Pr	6/25/09	9:23	FRANKLIN ST and PINE ST
36	456982	Street and Sidewalk Cleaning	6/25/09	9:25	19TH AVE and MORAGA ST
37	456987	Street and Sidewalk Cleaning	6/25/09	9:30	BREEN PL and MCALLISTER ST
38	456990	Street and Sidewalk Cleaning	6/25/09	9:33	460 JESSIE ST
39	456992	Sewer Issues	6/25/09	9:33	CASTRO ST and HENRY ST
40	456993	Street and Sidewalk Cleaning	6/25/09	9:37	BAY ST and THE EMBARCADERO
41	456995	Street and Sidewalk Cleaning	6/25/09	9:38	81 14TH ST
42	456997	Street and Sidewalk Cleaning	6/25/09	9:41	81 14TH ST
43	456998	Graffiti Complaint, Ai Private Pr	6/25/09	9:41	510 BUSH ST
44	457002	Street and Sidewalk Cleaning	6/25/09	9:47	17TH ST and SOUTH VAN NESS
45	457004	Tree Maintenance or Damage	6/25/09	9:48	15 PROSPER ST
46	457006	Street Defect	6/25/09	9:49	741 NATOMA ST
47	457009	Street and Sidewalk Cleaning	6/25/09	9:49	18TH ST and Castro
48	457011	Request for City Services	6/25/09	9:52	757 NATOMA ST
49	457012	Street Defect	6/25/09	9:53	4TH ST and HARRISON ST
50	457013	Tree Maintenance or Damage	6/25/09	9:53	8TH ST and HOWARD ST
51	457014	Request for City Services	6/25/09	9:54	1400 MASONIC AVE
52	457015	Street and Sidewalk Cleaning	6/25/09	9:54	150 SAN BRUNO AVE

Source: SpatialKey (March 2010)

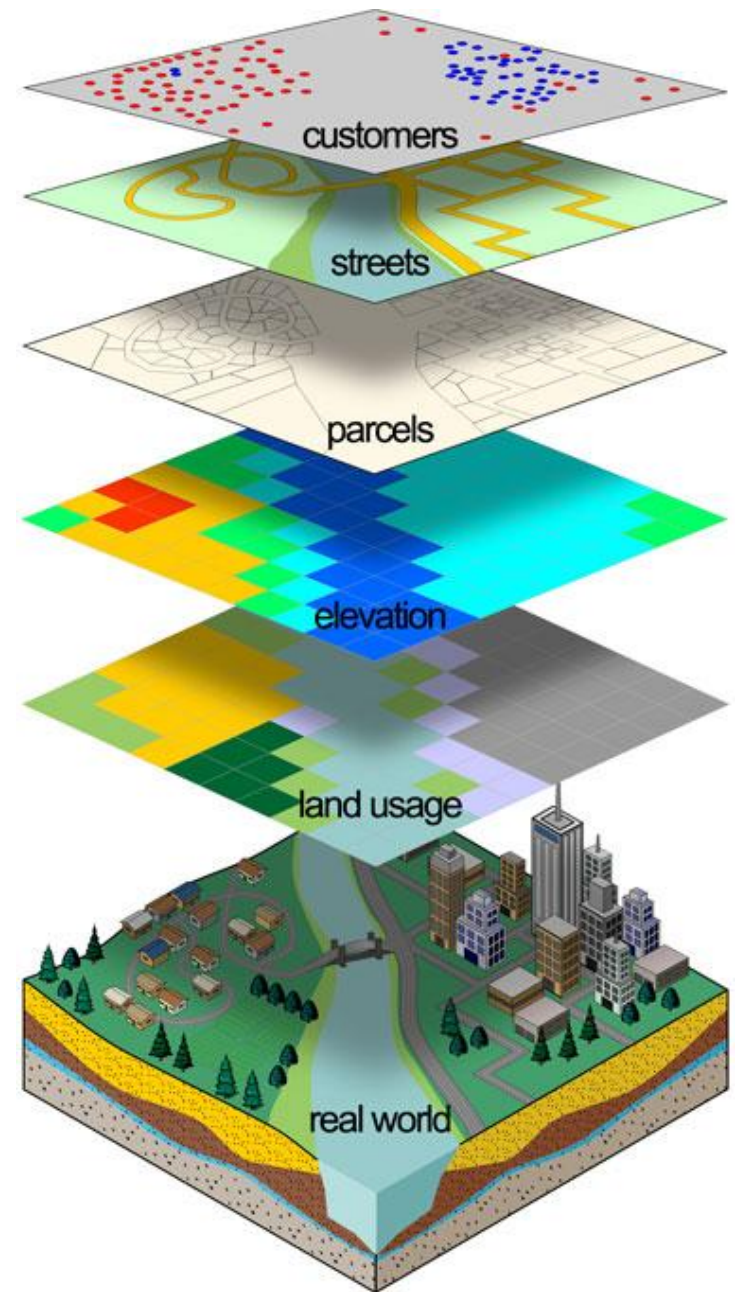
To This:

Figure 2. City of San Francisco 311 Service Request Geo-Enabled



Source: SpatialKey (March 2010)

The analysis of various data layers can reveal the hidden interdependencies of the variables. Showing positional data geospatially and overlaying critical decision data elements enables quicker, better, and more informed decisions, which lead to savings to tax payers by optimizing service delivery and in some cases, saving lives.



Primary Benefits of GIS

1. Cost savings/avoidance from greater efficiency
2. Improved communication
3. Better geographic information recordkeeping
4. Managing geographically
5. Better decision making

Additional GIS Benefits

Health and safety improvements

Improved service and excellence image

Enhanced citizen/customer satisfaction

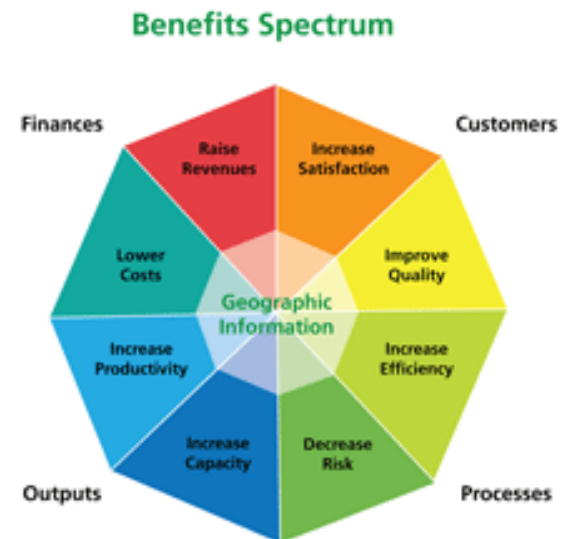
Increased regulatory compliance

Revenue protection and
assurance

Revenue growth

Lives saved

Time saved



GIS Application Areas

Examples of decisions that are made using GIS are:

- Department of Transportation (DOT) planning highways and understanding environmental impacts,
- Economic development specialists helping new industries locate appropriate facilities in the State,
- Environmental experts mapping flood plains, watersheds, and landslide-prone areas of the State (East and West) to prevent and reduce damage,
- Biologists plotting spreads of infectious disease throughout the State,
- Department of Public Safety determining how best to respond with emergency personnel to an accident, a crime scene, or a natural disaster
- Legislators making important redistricting decisions.

Geographic Information Coordinating Council

The North Carolina Geographic Information Coordinating Council (GICC) was established in August 2001 through General Statutes §143-725 through 143-727. “The GICC is established to develop policies regarding the utilization of geographic information, GIS systems, and other related technologies.

The Council shall be responsible for the following:

- 1) Strategic planning.
- 2) Resolution of policy and technology issues.
- 3) Coordination, direction, and oversight of State, local, and private GIS efforts.
- 4) Advising the Governor, the General Assembly, and the State Chief Information Officer as to needed directions, responsibilities, and funding regarding geographic information.”



Geospatial Collaboration Through the NC Geographic Information Coordinating Council

Reporting to the General Assembly under General Statutes § 143-725 through 143-727

*GICC User Committees Represent
Local, State, and Federal
Agencies*



**Geographic
Information
Coordinating Council
GICC**
Dr. Lee Mandell, Chair

Staff:
CGIA

Management and
Operations Committee –
M&O

NC OneMap
Governance

Statewide Mapping
Advisory Committee –
SMAC

Working Group for Roads and
Transportation – WGRT

Working Group for Seamless
Parcels – WGSP

Working Group for
Orthophotography Planning

Ad hoc
Committees
and
Working
Groups

Geospatial
Archiving
Committee
(for example)



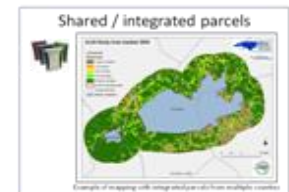
*GICC representation
includes local, state, and
federal governments,
regional organizations,
universities, private
businesses, and
nongovernmental
organizations*



Poster prepared by the
NC Center for Geographic
Information and Analysis in the
Office of the State Chief Information
Officer, Gerald L. Fralick

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May 2011



NC OneMap
Revitalization
Project

<http://www.nconemap.com/>

<http://www.ncgicc.com/>



Geographic Information Coordinating Council

Also responsible for:

- Improving the quality, access, cost-effectiveness, and utility of North Carolina's geographic information
- Promoting GIS as a strategic resource in the State
- Developing GIS standards, coordinating the acquisition of geographical data layers, and leveraging funding
- Revitalizing NC OneMap to reduce costs and increase its utility *[The FY09-10 budget bill did not provide funding for this mandate.]*



NC OneMap

nc ONE map The National Map

NC OneMap Viewer Back to the Main Page The National Map Viewer

Zoom

Query

Tools

Docs

Layers

- Location-Geodetic
- Structures
- Transportation
- Cadastral
- Boundaries
- Hydrography
- Utility-Telecom
- Economy
- Health
- Environment
- Socio-Demographic
- Bio-Habitat
- Geophysical
- Weather
- Land Cover
- Imagery-Basemap
- Elevation

Scale Information

Scale ~ 1:2,895,122

ncONEmap UserSurvey

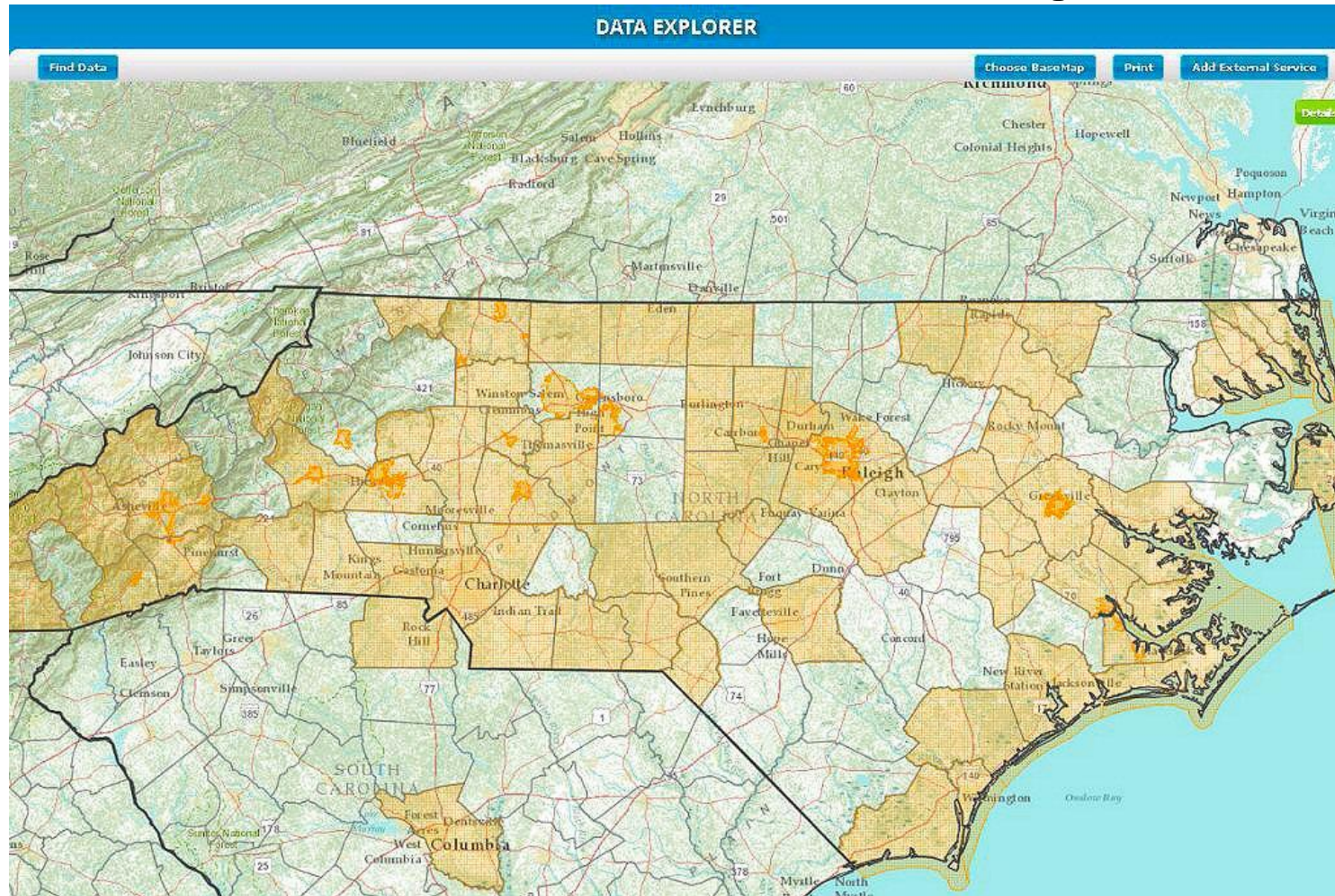
Lon: -80.39° Lat: 36.13° USNG: 17S NV 53957 98053 (NAD83)

- Zoom in for higher resolution data -

Participating local governments outlined in orange

U.S. Department of the Interior || U.S. Geological Survey
 URL: <http://204.211.239.202/viewer/> || Maintainer: webmapping@usgs.gov || Modified: June 28, 2004

Future NC OneMap



What is NC OneMap?

The State Clearinghouse for geospatial information supporting public and private sector data users and decision-making across the state. The only comprehensive source for North Carolina's geospatial information.

An evolving initiative directed by the NC GICC.

A public service providing a common portal and unified platform that allows data discovery and viewing and data retrieval and analysis of North Carolina's geospatial data resources without duplicating databases.

An organized effort of numerous partners throughout North Carolina, involving local, state, and federal government agencies, the private sector, and academia.

The geospatial backbone supporting North Carolina data users.



The NC OneMap Program Includes

Establishing NC OneMap Partnerships (80 counties, 26 cities and towns, 6 CoGs, 3 Federal agencies, and 5 State agencies)

Linking government data to NC OneMap

Cost-savings opportunities (high-resolution aerial photography)

Discovering and accessing data via the NC OneMap Geo-Spatial Portal to reduce duplication

Downloading free geospatial data

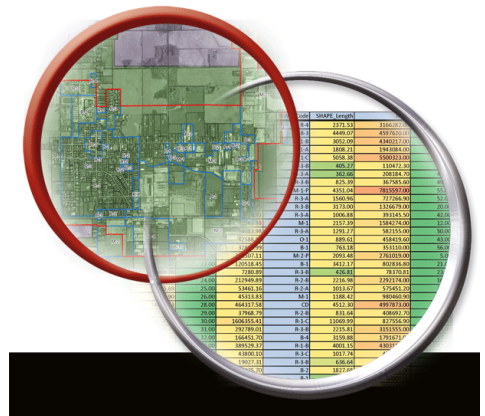
Preserving long-term access to geospatial data

Creating Web Map Services

Realizing the Benefits of coordinated GIS

Commitment to Data Sharing

Aiding metadata creation

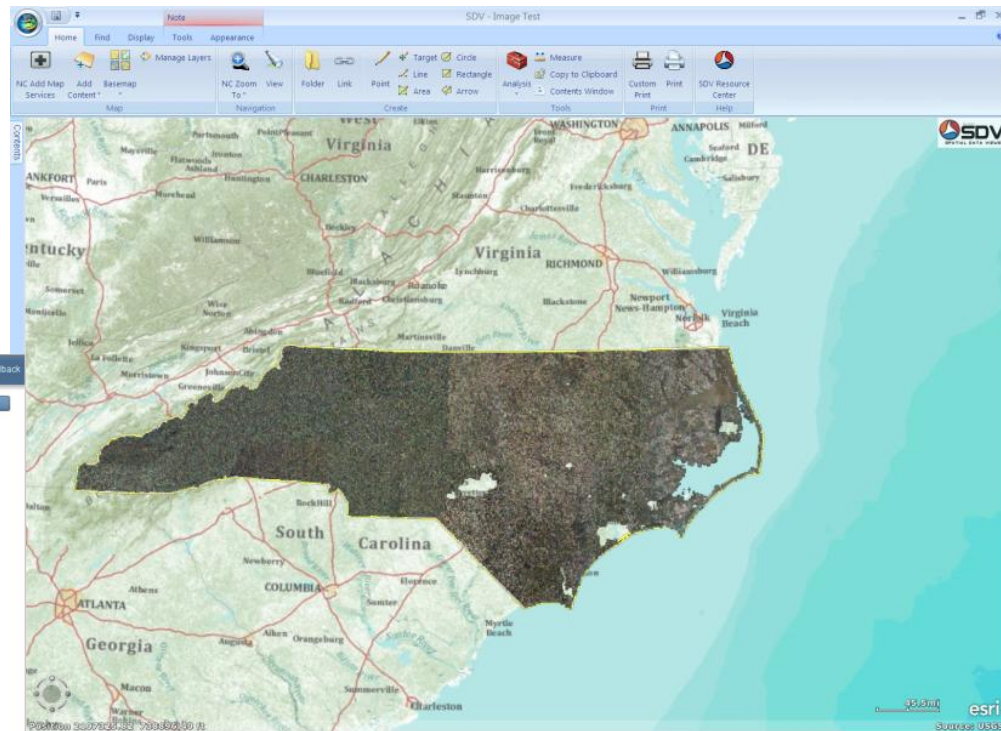


NC OneMap Geospatial Portal

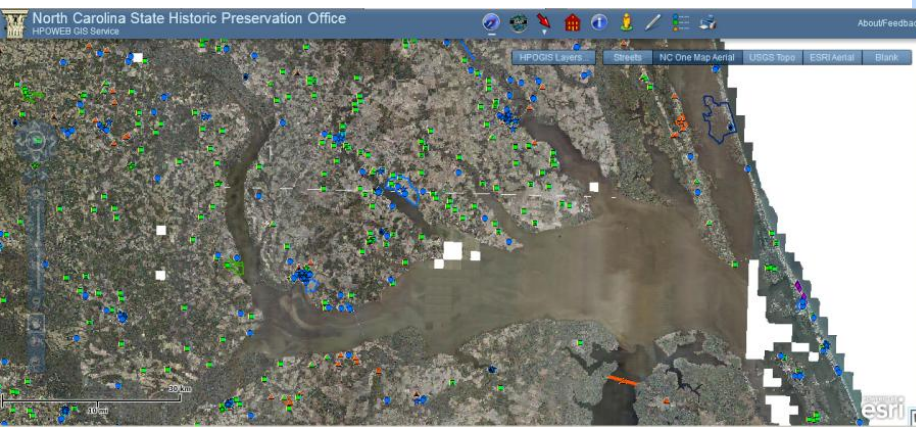
2010 Image Service: from one server to many map viewers

- NC Dept. of Transportation and NC Historic Preservation Office
- City of Asheville
- Buncombe, Cherokee, and Davie Counties
- Western Foothills Regional GIS Website
- Progress Energy and Frontier Natural Gas
- Private Sector Businesses

NC DOT Spatial Data Viewer



Historic Sites Map Viewer



The NC OneMap Program Vision

Statewide Geo-Spatial
Clearinghouse

Data Resources

Geo-Spatial
Framework

Data Discovery
and Access

Data Services

Data Archiving

Applications

Infrastructure

Staff

Procedures

Users

Collaboration

Agreements

Communications

Center for Geographic Information and Analysis (CGIA)

Manages and distributes digital geographic information about North Carolina, through NC OneMap.

Operates the statewide data clearinghouse and provides Internet access to State geographic information.

Is the lead agency for GIS services and GIS coordination for the State of North Carolina.

Brings the statewide GIS community together to promote data sharing, informed decision-making, and cost efficiencies.

Monitors and approves state agency GIS initiatives to ensure they are not duplicative.

Staffs the GICC and its committees.

Provides GIS services to state and local governments.



Background

In the FY09-10 budget bill, the NC General Assembly formally called for Geographic Information Consolidation, finding “that there is a critical need for consolidating the investments made in geographic information systems and developing common infrastructures in order for the State to reap all the potential benefits of geographic information systems at the lowest cost.”

The General Assembly directed the implementation of coordination and collaboration recommendations set forth in the “State Geographic Information Consolidation Implementation Plan:”

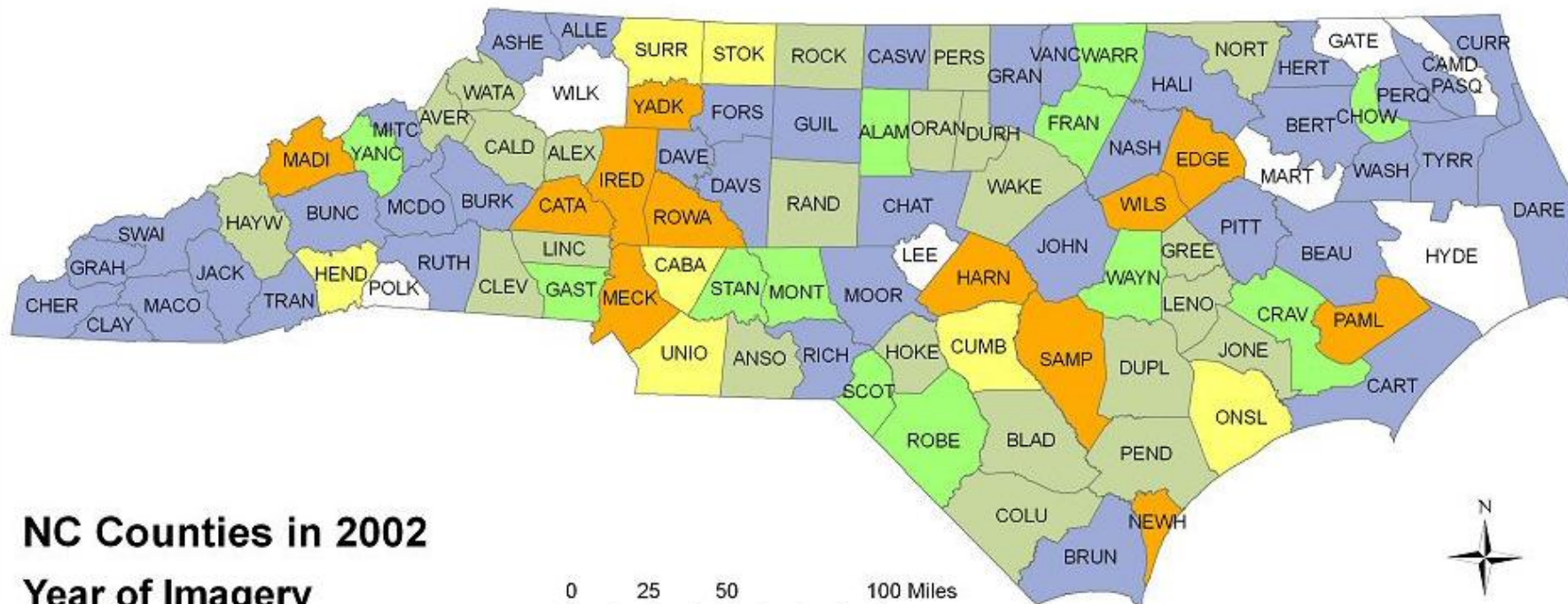
1. Transferring CGIA and the GICC to the Office of the State Chief Information Officer and establishing appropriated funding for staff activities supporting the GICC, statewide standards, and the coordination of data acquisition
2. Reestablishing the CGIA professional services component and refocusing that effort toward current needs of the community while reducing overhead costs



FY10-11 GICC Major Accomplishments

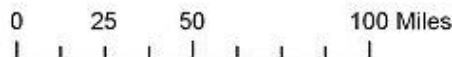
1. Delivery of high-resolution aerial photography completed for all 100 counties through a project funded by the NC 911 board. The data are also available to state, federal and regional government agencies, the private sector, the academic community and private citizens as map services and downloadable files from NC OneMap, which was upgraded to support the demand for the imagery. Consistent, high-resolution imagery now available to emergency responders and the statewide GIS community for the entire state for the first time.

Digital Orthophotography by County, Status in 2002



NC Counties in 2002

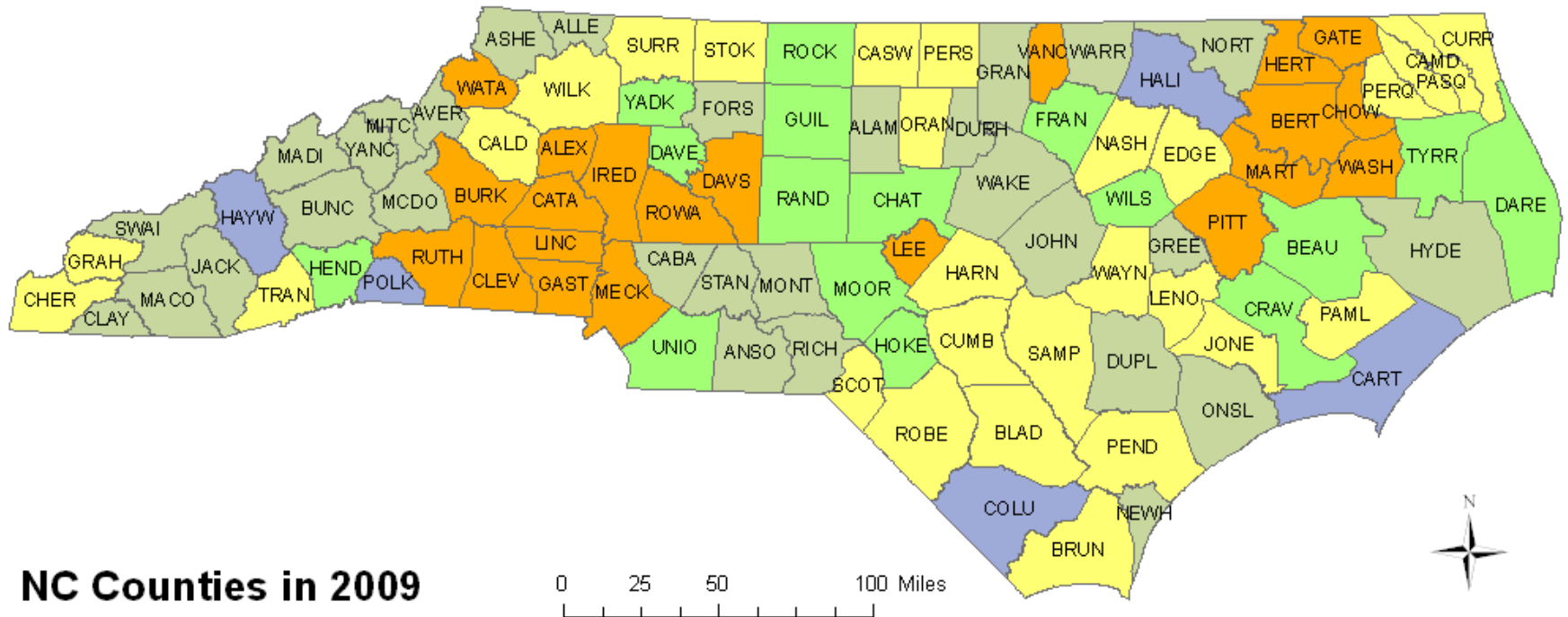
Year of Imagery



Sources: NC Center for Geographic Information and Analysis
and the Statewide Mapping Advisory Committee.

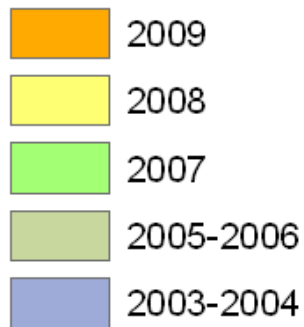
June 2, 2010

Digital Orthophotography by County, Status in 2009



NC Counties in 2009

Year of Imagery

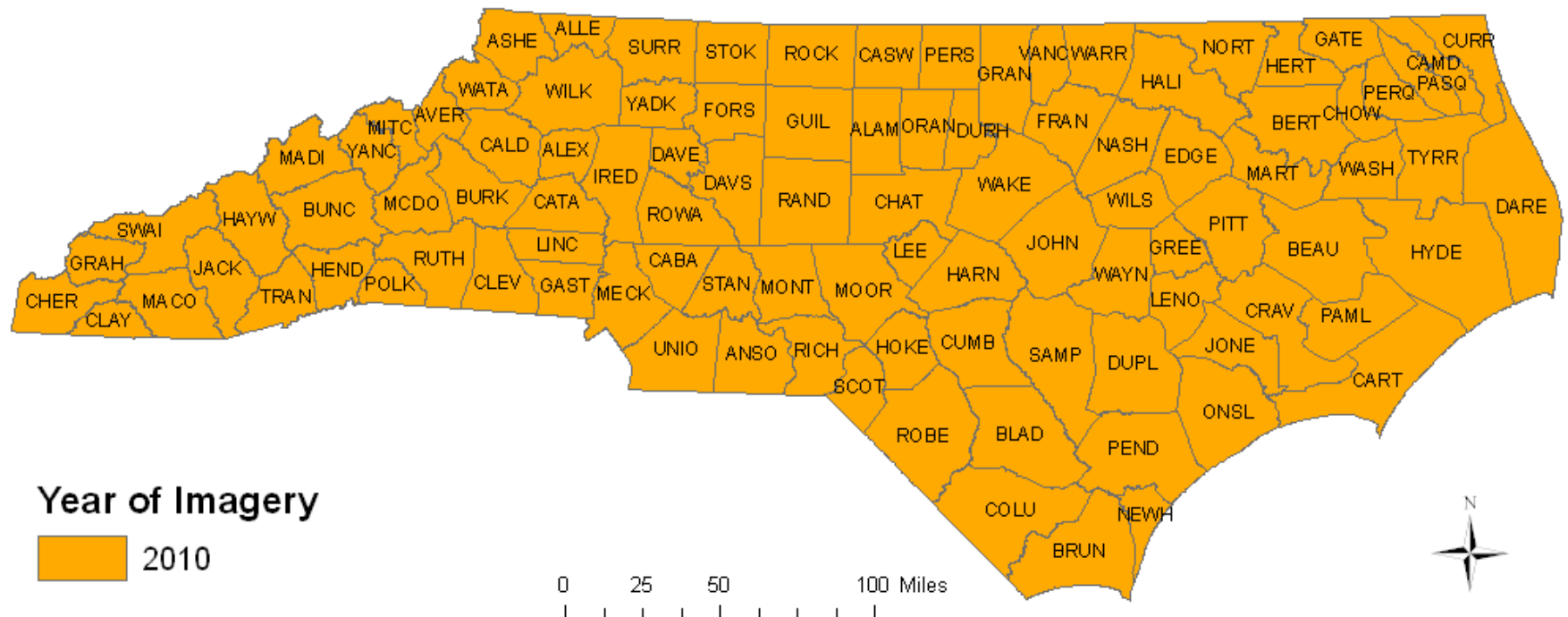


Sources: NC Center for Geographic Information and Analysis and the Statewide Mapping Advisory Committee.

April 30, 2010



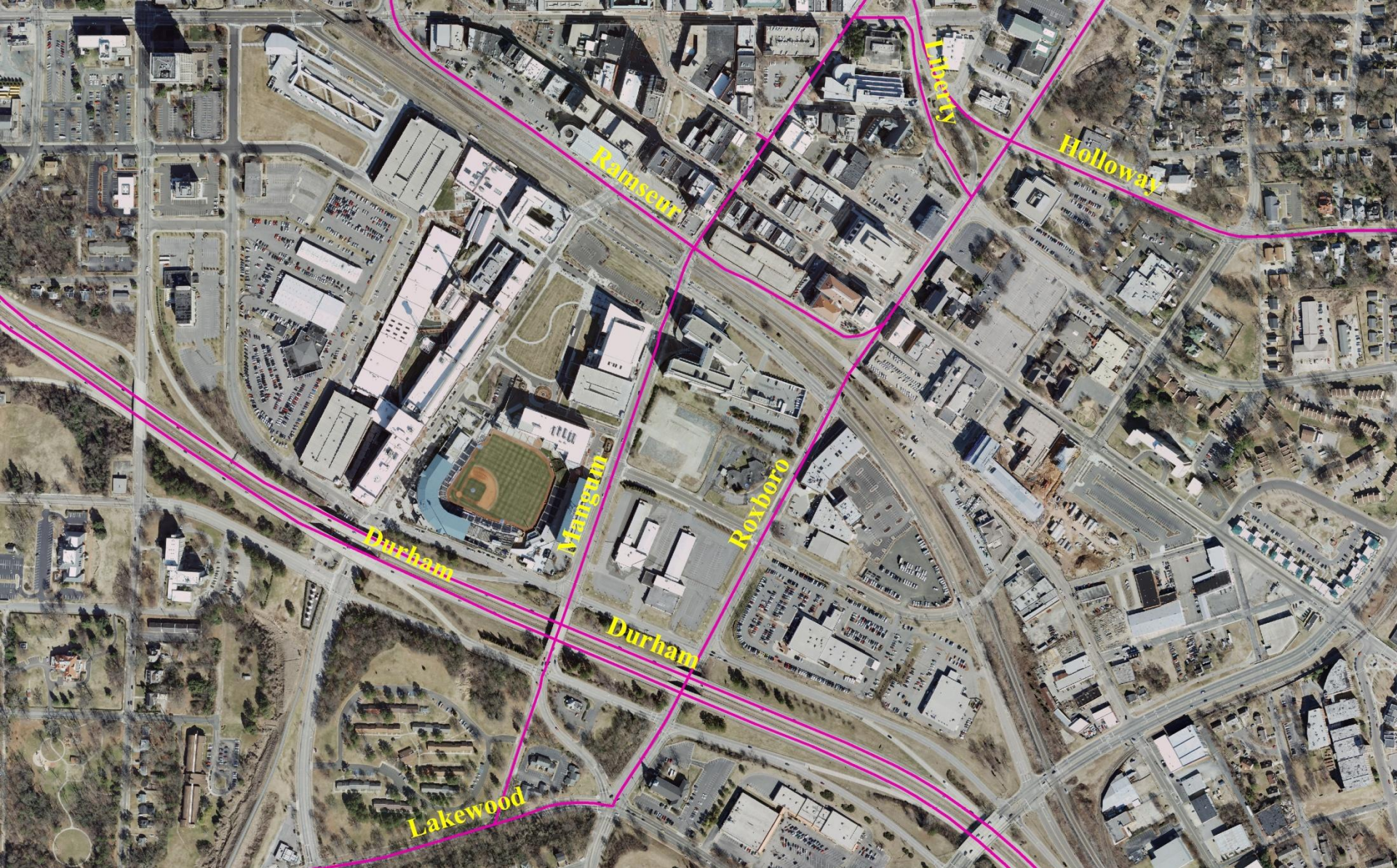
Digital Orthophotography by County, Status in 2010



Sources: NC Center for Geographic Information and Analysis and the Statewide Mapping Advisory Committee.

April 30, 2010











FY10-11 GICC Major Accomplishments

2. Adoption of a Business Plan for Orthoimagery in NC to support the continuing coordinated acquisition of a seamless statewide imagery dataset of standardized quality, resolution, age, and format. Led to approval by the NC 911 Board of a continuing imagery project.
3. Completion of a pre-planning project, as directed by the GA, to revitalize and define the business and functional requirements of *NC OneMap*.
4. Creation of the NC OneMap Governance Committee to develop, direct, and control NC OneMap strategy and resources to ensure that it sustains and extends the Council's strategies and goals, including adoption of performance goals and metrics.

FY10-11 GICC Major Accomplishments

5. As part of the NC OneMap revitalization project, the NC OneMap team implemented several of the recommendations in the NC OneMap revitalization pre-planning report to improve the performance and functionality of NC OneMap. Progress includes:
 - Release of the NC OneMap Geospatial Portal to discover and access geospatial data for North Carolina.
 - Development of an enhanced web service search tool to facilitate data discovery.
6. Preparation of a communications plan to promote and communicate activities and accomplishments related to 1) initiatives of the GICC and its committees and 2) mission/project activities of the GICC members, especially in the area of geospatial data development.



Hurricane Irene: Responding with GIS and Collaboration



GIS: Save Time, Money, and Lives



Aid timely evacuation

Inform call answering for 911 and response

Target damage assessments

Focus field observations

Assess damage with more accuracy

Track recovery

Communicate situations and progress

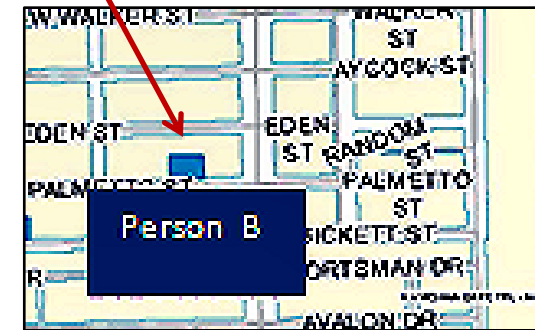
Deliver benefits at State and Local levels



Local: Preparation



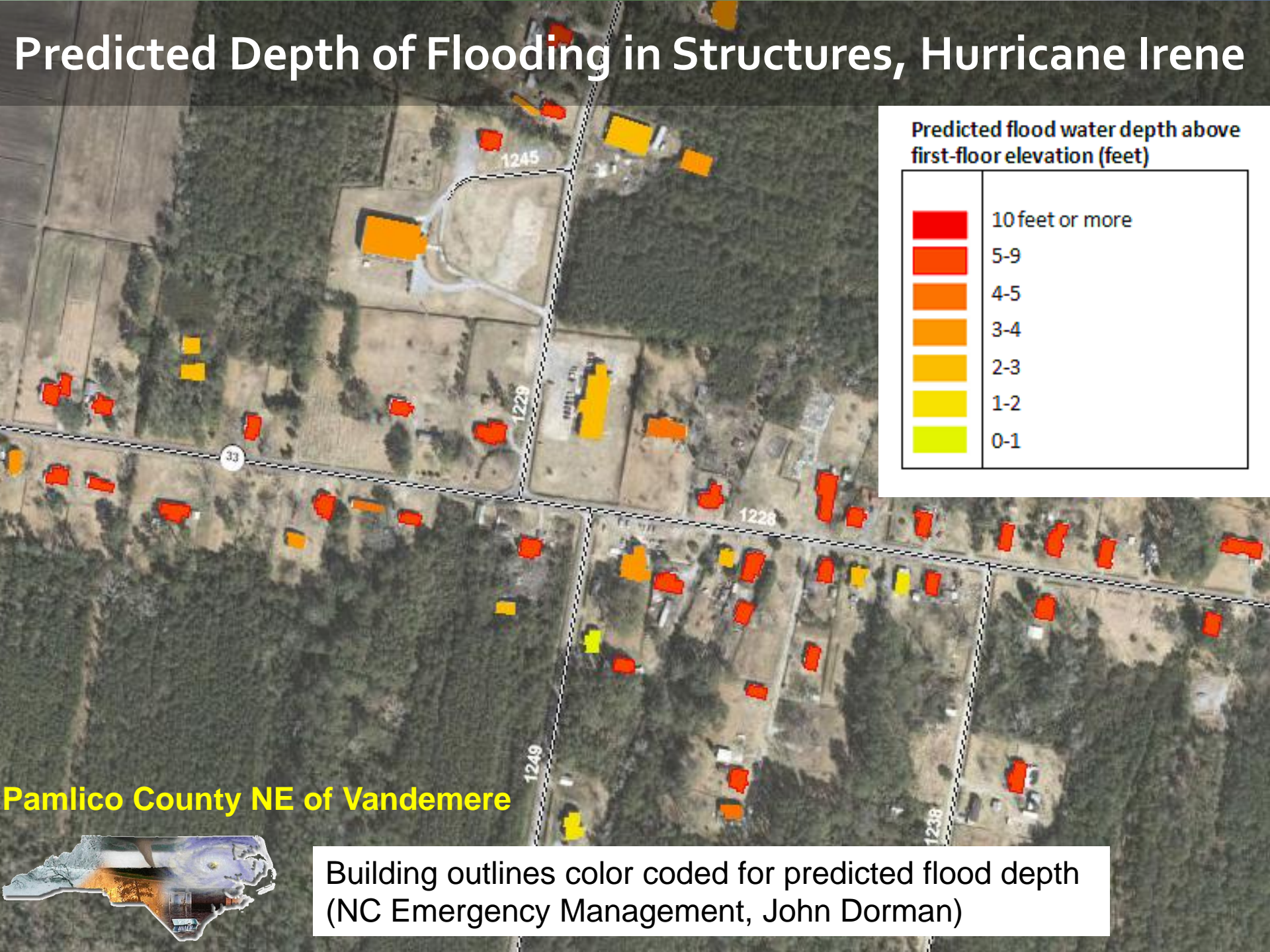
- Maps updated and printed for field workers:
 - Evacuation / residents with mobility problems
 - Roads (state, local and private)
 - Grid maps for search and rescue
 - Maps of flood hazard areas / buildings



(Dare County GIS)

Flood hazard areas in yellow hatch pattern with building outlines (coastal counties and NC Emergency Management, John Dorman)

Predicted Depth of Flooding in Structures, Hurricane Irene



Pamlico County NE of Vandemere



Building outlines color coded for predicted flood depth
(NC Emergency Management, John Dorman)

State and Federal: Preparation

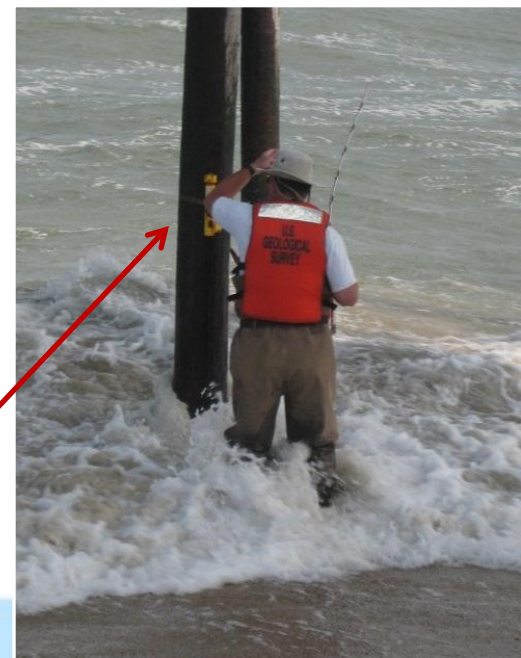


- Predicted storm path and wind impact areas
- Locations of farms and livestock / towns and people
- Models of flooding / buildings in harm's way
- "Before" aerial images are online



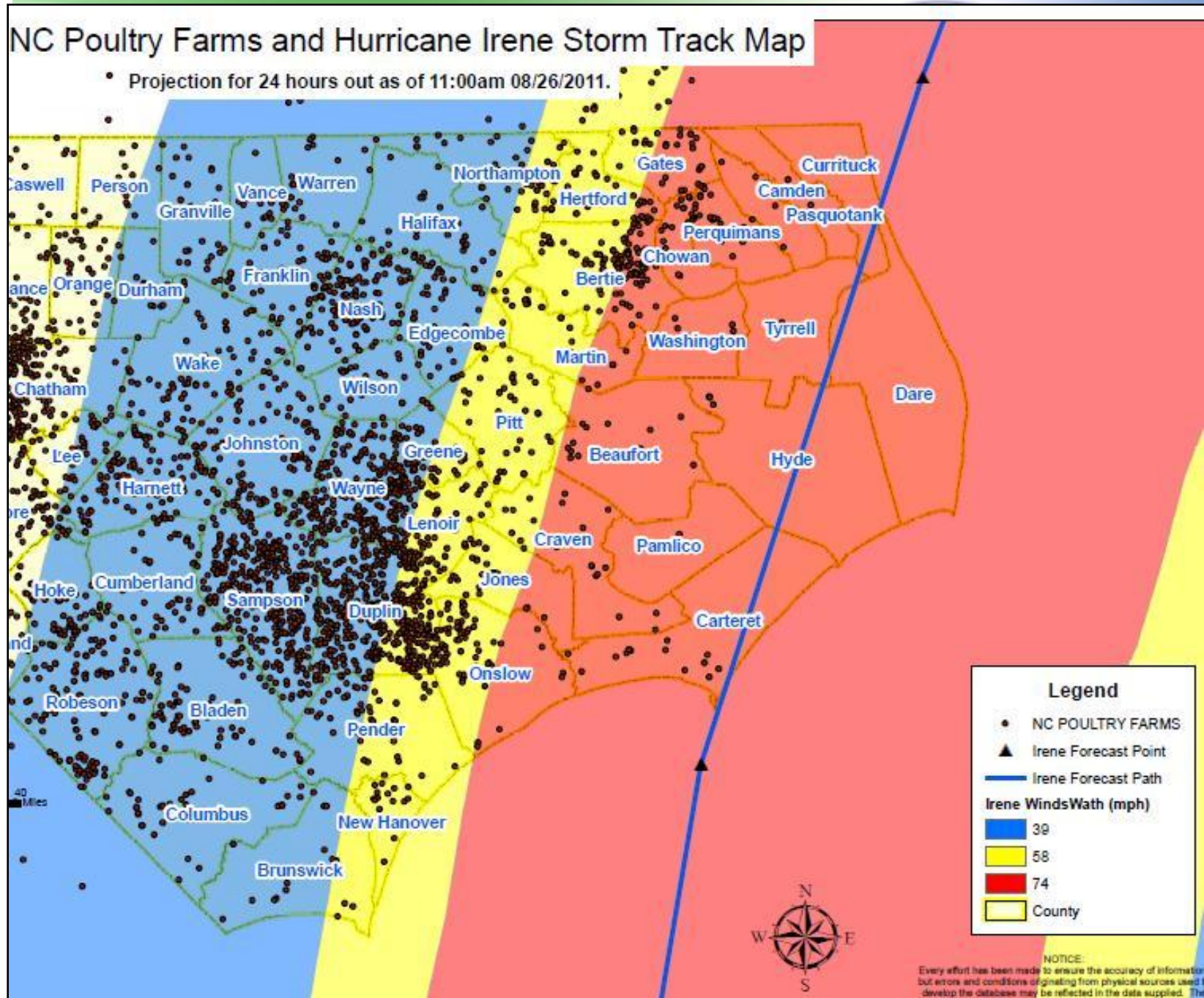
Predicted
impact areas
in Craven
County
(USGS, Silvia
Terziotti)

Storm surge
sensor
Installed
(USGS)

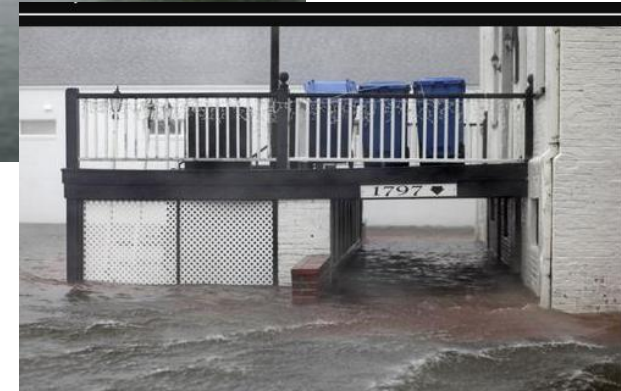
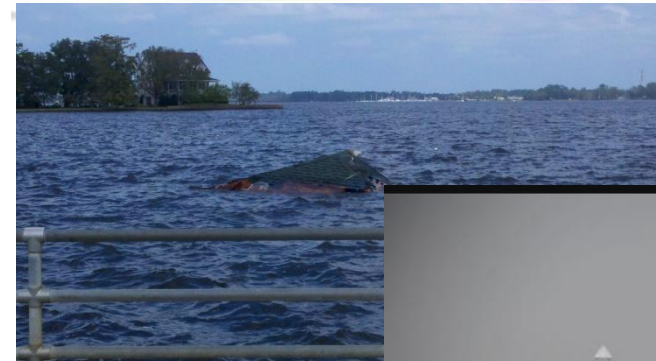
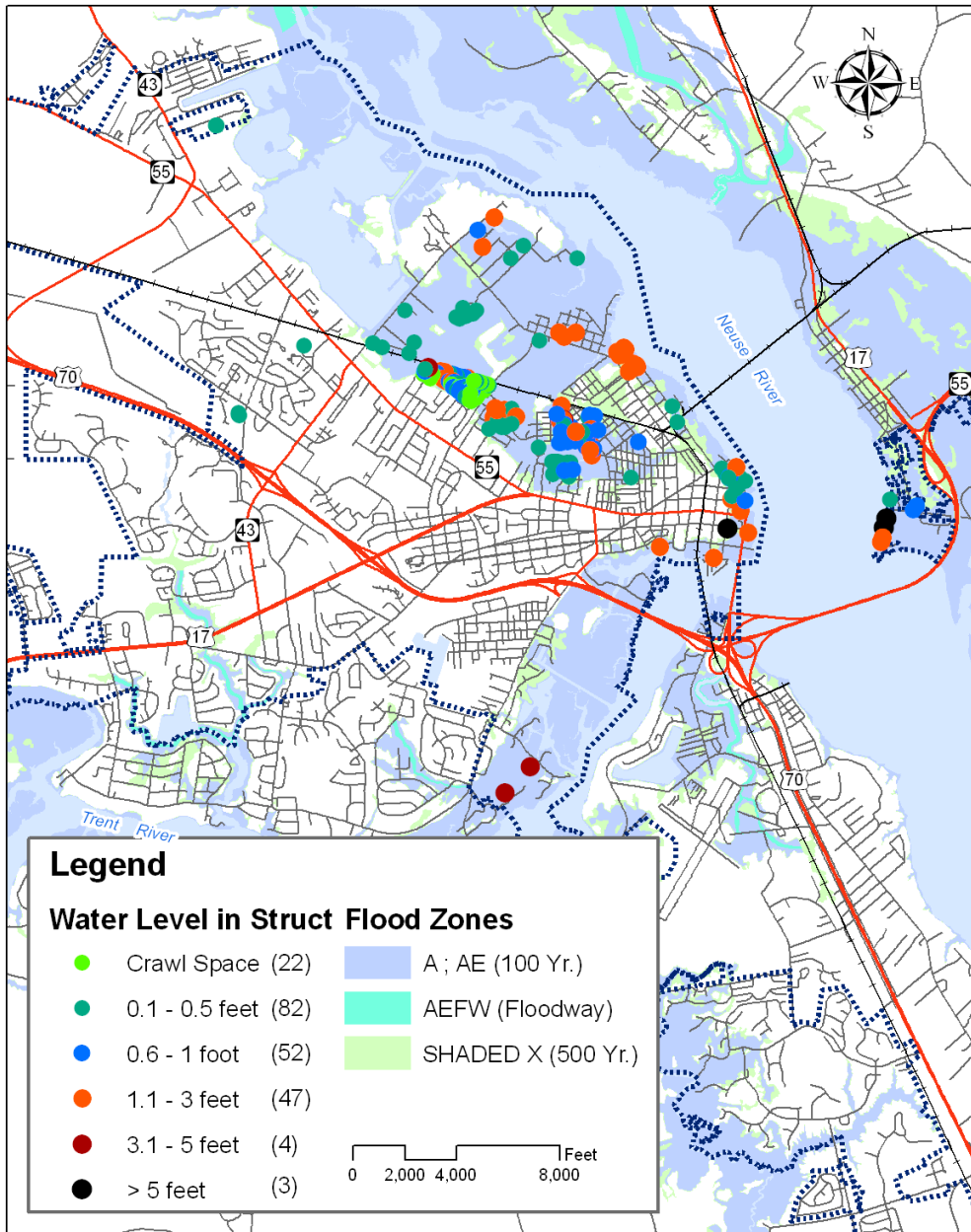


Map of projected wind paths for Irene and locations of poultry operations to prepare for potential damage assessment and assistance. Locations within highest wind areas (red) are of greatest concern.

(NC Dept. of Agriculture & Consumer Services, Daniel Madding)

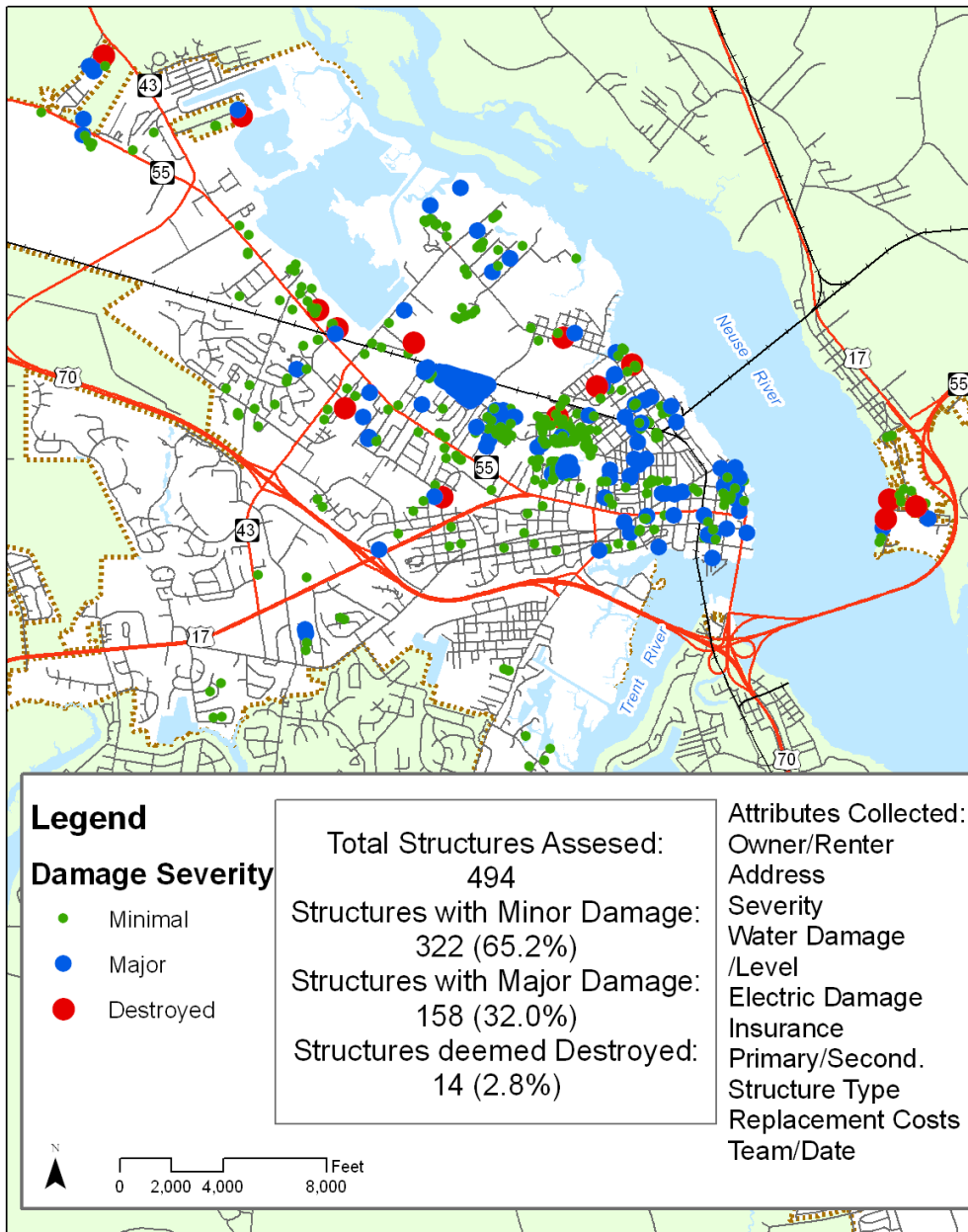


Local: Water Levels



(City of New Bern, Alice Wilson)

Local: Damage Assessments

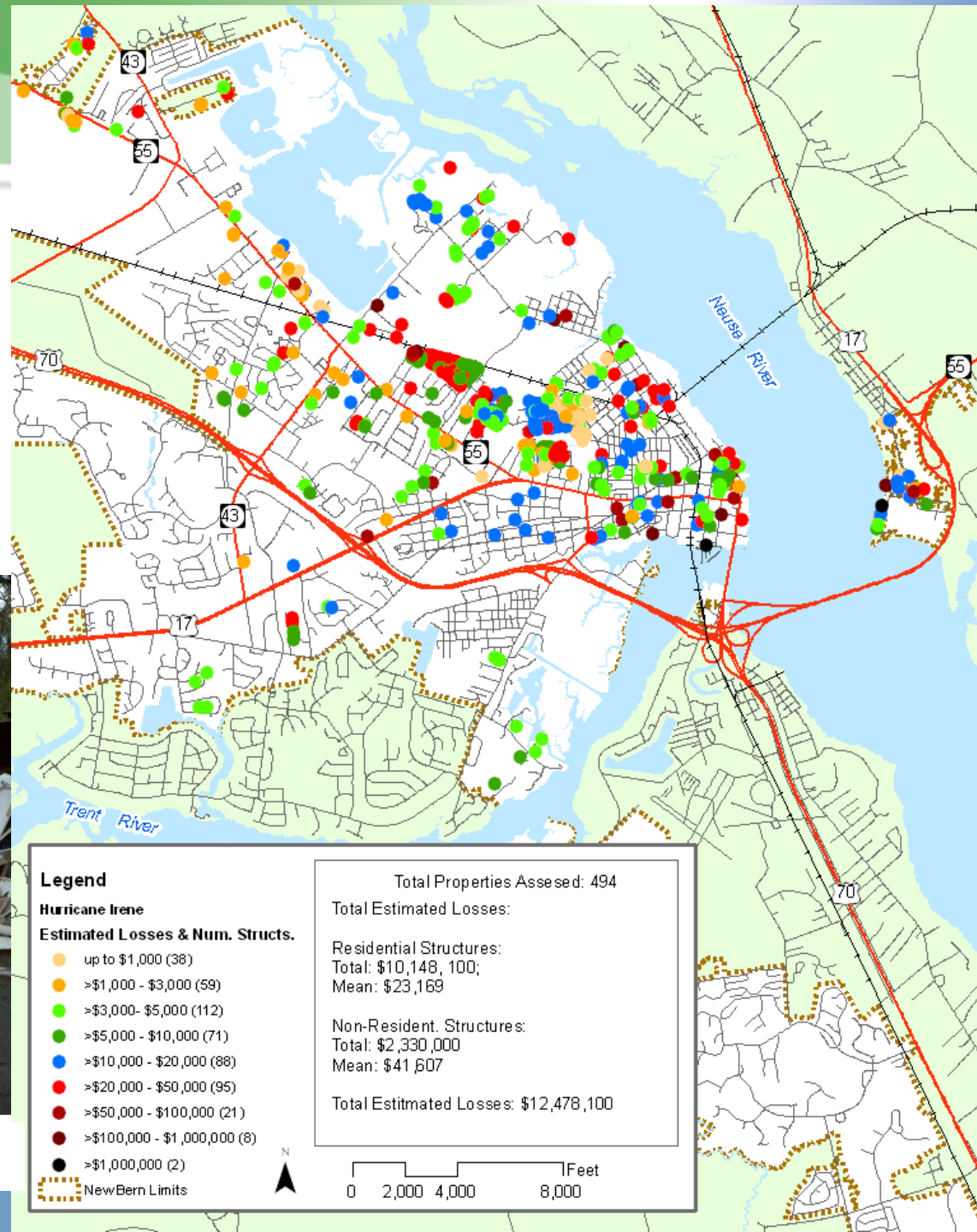


(City of New Bern, Alice Wilson)

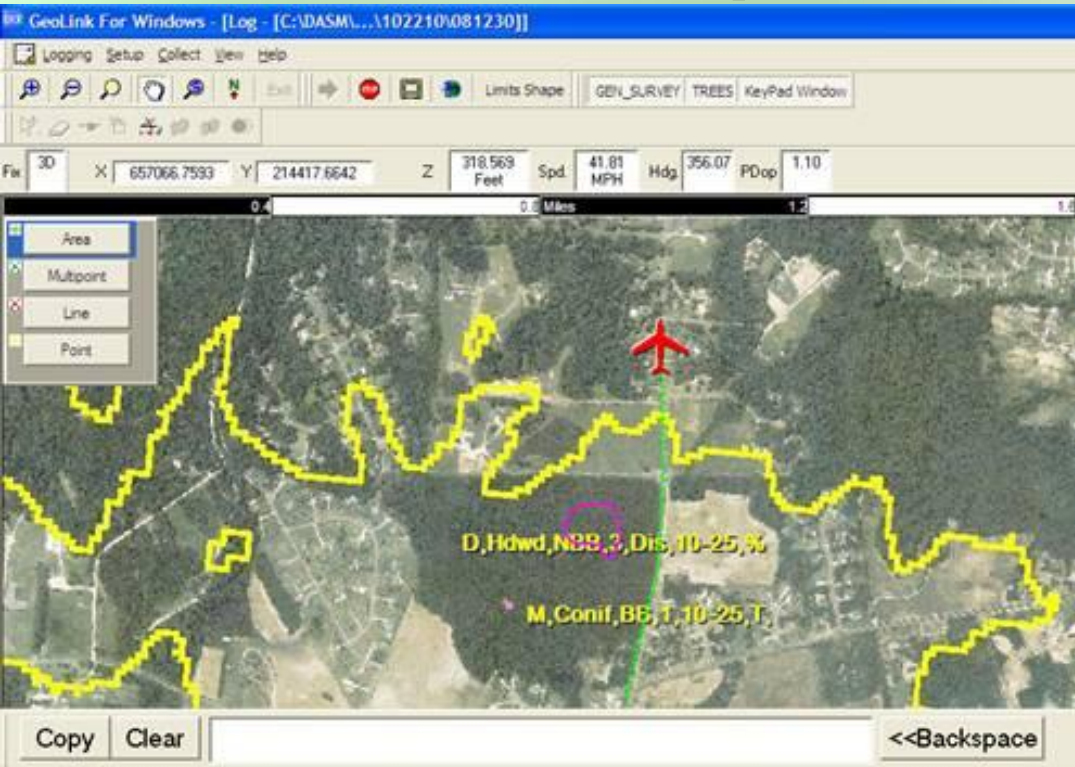
Local: Costs



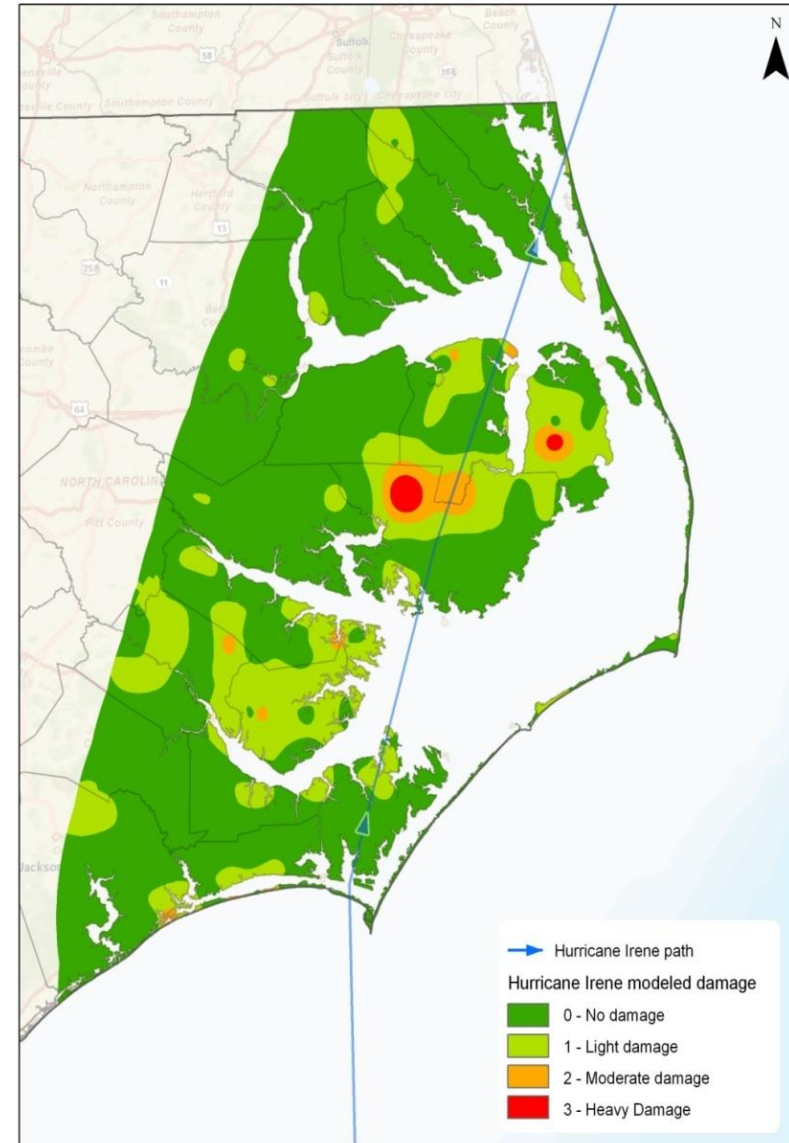
(City of New Bern, Alice Wilson)



State: Forestry Assessment



NC Forest Service did a survey of forest damage using a tablet in an aircraft, modeled a damage surface, and estimated market value of timber lost.



State: Monitoring Recovery



NCDOT
Spatial
Data
Viewer
with site
status
and
photos
along
Highway
264 in
Dare
County

(NCDOT
GIS, John
Farley)

The screenshot displays the SDV - My Default Map application interface. The top menu bar includes Home, Find, Display, Tools, and Appearance. The toolbar contains various tools for map interaction, including NC Add Map, Add Basemap, NC Zoom, View, Folder, Link, Point, Line, Area, Arrow, Target, Circle, Rectangle, Measure, Copy to Clipboard, Contents Window, Custom Print, Print, and SDV Resource Center Help.

The Contents pane on the left shows the following layers:

- Boundaries - Division
- Boundaries - State
- Hurricane Field Photos
- Basemap (NCDOT Community Map)

The main map area shows a map of Dare County, NC, with labels for Whippoorwill Creek Lake, Swan Creek Lake, Alligator River National Wildlife Refuge, Back Lake, Stumpy Point Bay, Sandy Bay, and Paws Island. A popup window for site 1028014B is open, displaying the following information:

1028014B	
SITE_NUM	1028014B
SITE_DESCRIPTION	S. Ferry Dredge Pit
LONGITUDE	-75.77705
LATITUDE	35.64561

The popup window also includes two images:

- IMAGE_01: A photograph of a road (Highway 264) with a yellow center line and orange traffic cones on the side. The image is labeled [1028014B_US264Before1.jpg](#).
- IMAGE_02: A photograph of a road with orange traffic cones and a guardrail. The image is labeled [1028014B_US264Before2.jpg](#).

The popup window also includes the following text:

- IMAGE_01_COMMENT: Null
- IMAGE_02_COMMENT: Null
- IMAGE_03: Null
- IMAGE_03_COMMENT: Null

The bottom status bar shows the position: 2982262.41 718271.52 ft. The bottom right corner features a scale bar (1.5mi) and the esri logo, with the text "Source: NASA, NGA, USGS".

Before and After Irene



Area north of Rodanthe in early 2010 (left) and August 28, 2011(right).
These images were available on NC OneMap by August 30 in a collaborative effort between NC DOT and CGIA.

(CGIA / NC OneMap,
Brett Spivey and David Giordano)



Assessing Damage

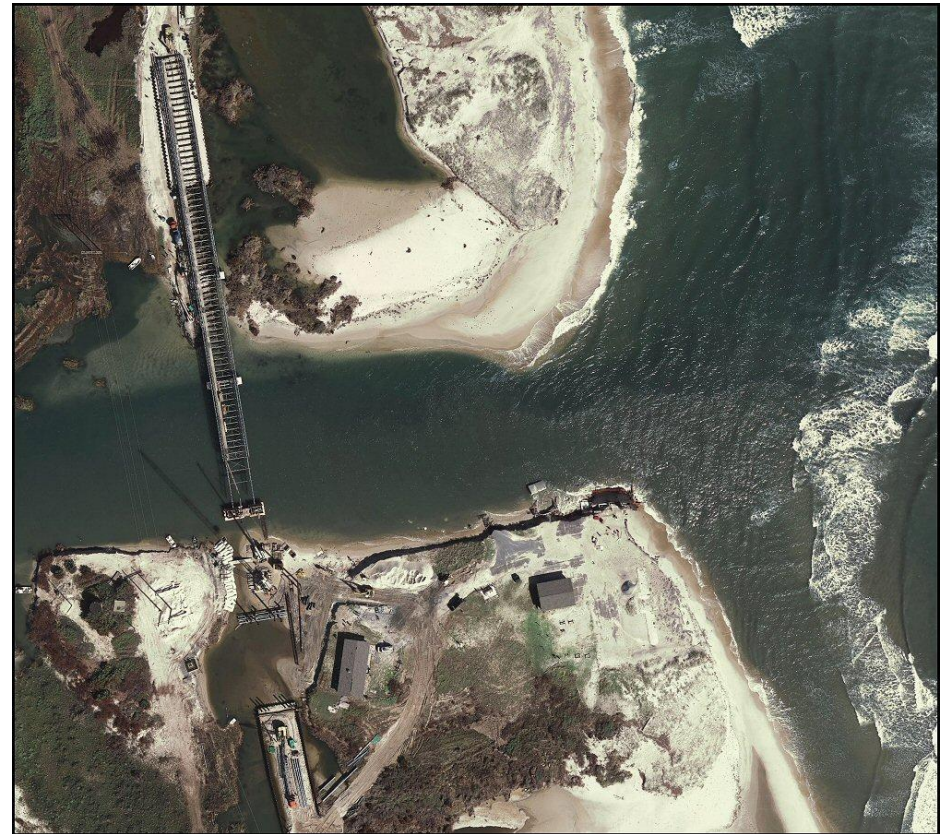


Oceanfront structures in Nags Head: early 2010 and post-Irene (NCDOT imagery). Structures circled on the left are missing on the right after the storm

(NC DOT Photogrammetry,
Keith Johnston)



Tracking Progress



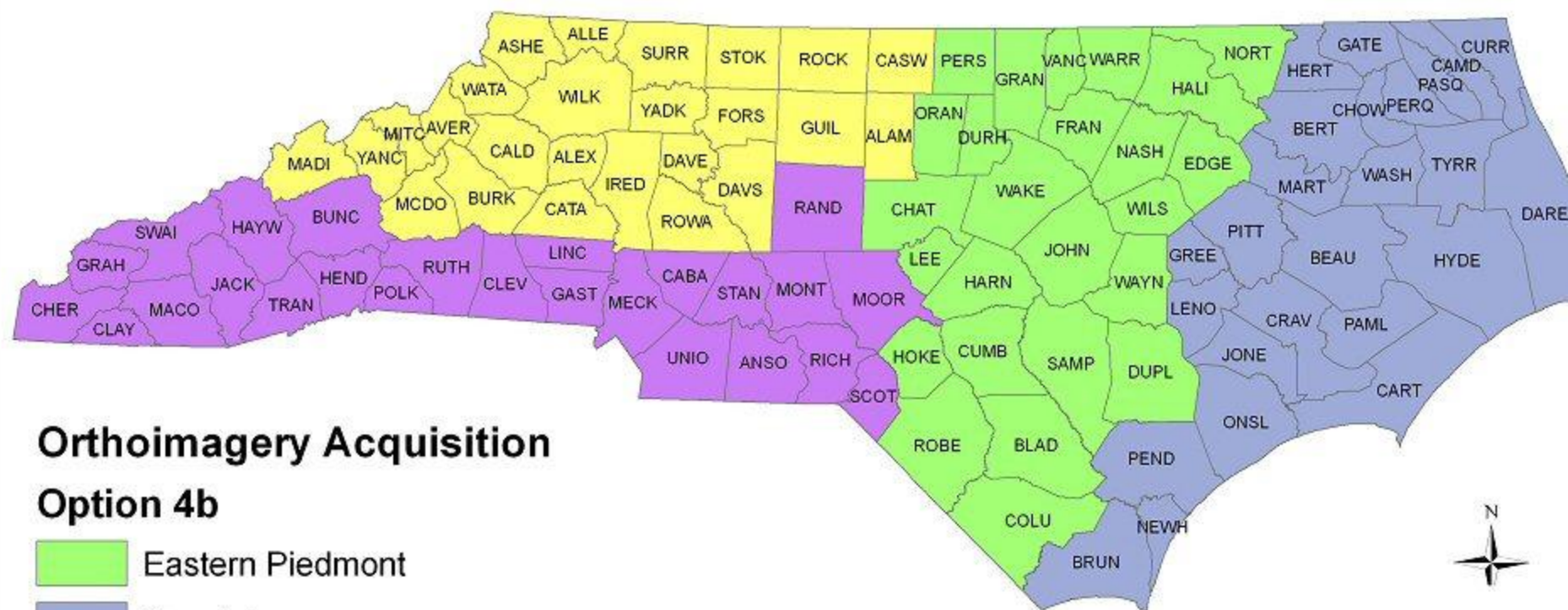
Breach post-Irene (NOAA) and road repair progress weeks later (NC DOT imagery). By mid-September, the imagery display on NC OneMap was time-enabled for easy comparison of before and after conditions as well as progress in recovery.

GICC Action Plan for FY11-12

1. Continue NC OneMap Technology Revitalization and development of performance metrics
2. Begin Statewide Program for Orthoimagery 2012
3. Complete the Statewide GIS Strategy
4. Continue Adoption and Promotion of Standards
5. Execute Communication Plan
6. Ongoing GICC Actions
 - improve data resources including parcel boundaries, statewide roads, and preservation of geospatial data
 - enhance NC OneMap clearinghouse and warehouse activities
 - continue outreach activities on the GICC's mission and initiatives, and engage the many North Carolinians who benefit from and enhance the state's geospatial resources. In addition, the GICC, CGIA, and GIS users will consider sponsoring another "GIS Serving North Carolina" day at the GA in 2012 to display examples of geospatial data applications.



Statewide Digital Orthoimagery, Option 4b: State Divided in Fourths with Mountains and Western Piedmont Split North and South



Orthoimagery Acquisition Option 4b



0 25 50 100 Miles



Sources: NC Center for Geographic Information and Analysis
and the Working Group for Orthophotography Planning,
Statewide Mapping Advisory Committee.

October 4, 2010

GICC Legislative Agenda

1. Conforming changes to enabling statutes required by FY2009-10 budget special provisions. Addition of 911 Board and Board of Elections Executive Directors as a permanent Council members. (HB152)
2. Funding for NC OneMap Revitalization Project: \$247,000 for FY2012-13. (PCS for HB94)
3. Restoration of full CGIA funding from IT Fund to \$740,000 per year after a 19% cut.

The Future of CGIA and NC OneMap

With extremely limited funding, CGIA has made NC OneMap successful in many ways, but has been unable to achieve many of its original and new objectives. The value of achieving these objectives has increased with time and rising dependence on geographic information at all levels of government, especially in public safety.

With the necessary funding, North Carolina will be positioned to embrace the latest GIS technology available to mitigate business risks, lower costs, improve service, and comply with state law.

Without full funding for CGIA activities and NC OneMap revitalization, we will be unable to upgrade, support, maintain, and grow NC OneMap services.

CGIA will have increasing difficulty meeting its legislative mandate as the lead agency for GIS services and GIS coordination for the State. The state will run the risk of a return to a de-consolidation of GIS investments that will increase the levels of effort and costs in state agencies as the statewide coordination, support, and value added by CGIA and NC OneMap services diminishes.

GICC Legislative Agenda

4. Long-term, independent, non-reverting, and potentially growing funding source to fund:
 - CGIA legislatively mandated responsibilities and the meeting the needs of an increasing number of GIS users and applications in the public and private sectors
 - NC OneMap operations, maintenance, and growth
 - The acquisition and update of key data layers
 - Support for the GICC and its initiatives through CGIA
 - Enhanced support for local governments

Stable GIS Funding

Direct a 2.5% share of the State Excise Tax on Real Estate Conveyances to CGIA effective 3/1/2013

Establish a NC Geographic Information Systems Reserve Account to accept the revenue

Eliminate appropriation for CGIA beginning in FY2013-14

This funding source is associated with private sector groups that benefit greatly from the statewide GIS data coordination and data provision missions of CGIA and the GICC: realtors, home builders, and developers, as well as the general public.



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